CLAIMS

1. Interface apparatus comprising:

a panel defining at least one edge;

at least one detector arranged along said at least one edge of said panel; and

an electromagnetic radiation beam emitter operative to direct at least one beam of electromagnetic radiation onto said panel from a variable distance and at a variable angle;

said panel being operative to transmit electromagnetic radiation from said at least one beam impinging thereon to said at least one edge thereof, for detection by said at least one detector, said panel being operative to generally attenuate said electromagnetic radiation passing therethrough to said at least one edge as a function of the distance traveled by the electromagnetic radiation through the panel, whereby said at least one detector is operative to provide at least one output which can be used to determine said variable distance and said variable angle.

2. Interface apparatus according to claim 1 and wherein said panel comprises a display.

3. Interface apparatus according to claim 1 and wherein said panel comprises a mobile telephone display panel.

4. Interface apparatus according to claim 1 and wherein said panel comprises a hand-held computing device display panel.

5. Interface apparatus according to claim 1 and wherein said panel comprises a television display panel.

6. Interface apparatus according to claim 1 and wherein said panel comprises an input pad panel.

7. Interface apparatus according to any of the preceding claims and wherein said at

least one detector comprises a generally linear array of detectors.

8. Interface apparatus according to any of the preceding claims and wherein said at least one detector is capable of detecting said electromagnetic radiation at predetermined frequencies in at least one of visible and non-visible ranges.

9. Interface apparatus according to any of the preceding claims and wherein said electromagnetic radiation beam emitter is operative to provide a generally conical beam.

10. Interface apparatus according to any of the preceding claims and wherein said electromagnetic radiation beam emitter is operative to provide a plurality of beams.

11. Interface apparatus according to any of the preceding claims 1 - 8 and 10 and wherein said electromagnetic radiation beam emitter is operative to provide at least one generally collimated beam.

12. Interface apparatus according to any of the preceding claims 1 - 8 and 10 and wherein said electromagnetic radiation beam emitter is operative to provide at least one beam having a generally asymmetrical cross section.

13. Interface apparatus according to any of the preceding claims 1 - 8 and 10 and wherein said electromagnetic radiation beam emitter is operative to provide at least one beam having a generally pyramidal shape.

14. Interface apparatus according to any of the preceding claims 1 - 8 and 10 and wherein said electromagnetic radiation beam emitter is operative to provide at least one beam having a generally polygonal cross section.

15. Interface apparatus according to any of the preceding claims and wherein said electromagnetic radiation beam emitter is operative to provide a modulated beam.

16. Interface apparatus according to any of the preceding claims and wherein said electromagnetic radiation beam emitter is operative to provide a beam of visible light.

17. Interface apparatus according to any of claims 1 - 15 and wherein said electromagnetic radiation beam emitter is operative to provide a beam of non-visible electromagnetic radiation.

18. Interface apparatus according to any of the preceding claims and also comprising detector output processing circuitry operative to receive at least one output of said at least one detector and to provide an output indication of at least one of location, orientation, shape and size of at least one impingement spot defined by impingement of said at least one electromagnetic radiation beam on said panel.

19. Interface apparatus according to any of the preceding claims and also comprising detector output processing circuitry operative to receive at least one output of said at least one detector and to provide an output indication of at least two of location, orientation, shape and size of at least one impingement spot defined by impingement of said at least one electromagnetic radiation beam on said panel.

20. Interface apparatus according to any of the preceding claims and also comprising detector output processing circuitry operative to receive at least one output of said at least one detector and to provide an output indication of at least three of location, orientation, shape and size of at least one impingement spot defined by impingement of said at least one electromagnetic radiation beam on said panel.

21. Interface apparatus according to any of the preceding claims and also comprising detector output processing circuitry operative to receive at least one output of said at least one detector and to provide an output indication of location, orientation, shape and size of at least one impingement spot defined by impingement of said at least one electromagnetic radiation beam on said panel.

22. Interface apparatus according to any of the preceding claims and also comprising detector output processing circuitry operative to receive at least one output of said at least one detector and to provide an output indication of at least one of the location and angular orientation of said electromagnetic radiation beam emitter.

23. Interface apparatus according to any of the preceding claims and also comprising detector output processing circuitry operative to receive at least one output of said at least one detector and to provide an output indication of the location and angular orientation of said electromagnetic radiation beam emitter.

24. Interface apparatus according to any of the preceding claims and also comprising detector output processing circuitry operative to receive at least one output of said at least one detector and to provide an output indication of at least one of the location and angular orientation of said electromagnetic radiation beam emitter, said location being defined as a Z-distance between a plane of said panel along a line perpendicular thereto and a plane parallel to said plane of said panel in which a beam origin of said electromagnetic radiation beam emitter is located.

25. Interface apparatus according to any of the preceding claims and also comprising detector output processing circuitry operative to receive at least one output of said at least one detector and to provide an output indication of at least one of the location and angular orientation of said electromagnetic radiation beam emitter, said location being defined as a point-to-point distance between a beam origin of said electromagnetic radiation beam emitter and a center of an impingement location of said beam on said panel.

26. Interface apparatus according to any of the preceding claims and also comprising detector output processing circuitry operative to receive at least one output of said at least one detector and to provide an output indication of a trajectory of said electromagnetic radiation beam emitter.

27. Interface apparatus according to any of the preceding claims wherein impingement

of said beam on said panel provides a generally elliptical impingement spot.

28. Interface apparatus according to claim 27 and also comprising analysis circuitry operative to determine a ratio of a major axis and a minor axis of said elliptical impingement spot, thereby to determine an angle of intersection between said beam and said panel.

29. Interface apparatus according to any of the preceding claims and comprising analysis circuitry operative to employ detected variations in intensity of said electromagnetic radiation at different locations on an impingement spot defined by impingement of said beam on said panel, thereby to assist in determination of an angle of intersection between said beam and said panel.

30. An interface method comprising:

providing a panel defining at least one edge, at least one detector arranged along said at least one edge of said panel and an electromagnetic radiation beam emitter operative to direct at least one beam of electromagnetic radiation onto said panel from a variable distance and at a variable angle;

directing said beam of electromagnetic radiation from said electromagnetic radiation beam emitter onto said panel, thereby producing at least one impingement spot;

employing said panel to transmit electromagnetic radiation from said at least one impingement spot to said at least one edge thereof, said panel being operative to generally attenuate said electromagnetic radiation passing therethrough to said at least one edge as a function of the distance traveled by the electromagnetic radiation through the panel;

detecting, by said at least one detector, said electromagnetic radiation transmitted by said panel to said at least one edge;

employing an output of said at least one detector to determine said variable distance and said variable angle.

31. An interface method according to claim 30 and wherein providing said panel comprises providing a display.

32. An interface method according to claim 30 and wherein providing said panel comprises providing a mobile telephone display panel.

33. An interface method according to claim 30 and wherein providing said panel comprises providing a hand-held computing device display panel.

34. An interface method according to claim 30 and wherein providing said panel comprises a providing television display panel.

35. An interface method according to claim 30 and wherein providing said panel comprises providing an input pad panel.

36. An interface method according to any of claims 30 – 35 and wherein providing said at least one detector comprises providing a generally linear array of detectors.

37. An interface method according to any of claims 30 – 36 and wherein said detecting by said at least one detector comprises detecting electromagnetic radiation at predetermined frequencies in at least one of visible and non-visible ranges.

38. An interface method according to any of claims 30 – 37 and wherein providing said electromagnetic radiation beam emitter comprises providing and electromagnetic radiation beam emitter which is operative to provide a generally conical beam.

39. An interface method according to any of claims 30 – 38 and wherein providing said electromagnetic radiation beam emitter comprises providing and electromagnetic radiation beam emitter which is operative to provide a plurality of beams.

40. An interface method according to any of the preceding claims 30 - 37 and 39 and wherein providing said electromagnetic radiation beam emitter comprises providing and electromagnetic radiation beam emitter which is operative to provide at least one generally

collimated beam.

41. An interface method according to any of the preceding claims 30 - 37 and 39 and wherein providing said electromagnetic radiation beam emitter comprises providing and electromagnetic radiation beam emitter which is operative to provide at least one beam having a generally asymmetrical cross section.

42. An interface method according to any of the preceding claims 30 - 37 and 39 and wherein providing said electromagnetic radiation beam emitter comprises providing and electromagnetic radiation beam emitter which is operative to provide at least one beam having a generally pyramidal shape.

43. An interface method according to any of the preceding claims 30 - 37 and 39 and wherein providing said electromagnetic radiation beam emitter comprises providing and electromagnetic radiation beam emitter which is operative to provide at least one beam having a generally polygonal cross section.

44. An interface method according to any of claims 30 – 43 and wherein providing said electromagnetic radiation beam emitter comprises providing and electromagnetic radiation beam emitter which is operative to provide a modulated beam.

45. An interface method according to any of claims 30 – 44 and wherein providing said electromagnetic radiation beam emitter comprises providing and electromagnetic radiation beam emitter which is operative to provide a beam of visible light.

46. An interface method according to any of claims 30 - 44 and wherein providing said electromagnetic radiation beam emitter comprises providing and electromagnetic radiation beam emitter which is operative to provide a beam of non-visible electromagnetic radiation.

47. An interface method according to any of claims 30 – 46 and also comprising providing detector output processing circuitry operative to receive at least one output of

said at least one detector and to provide an output indication of at least one of location, orientation, shape and size of at least one impingement spot defined by impingement of said at least one electromagnetic radiation beam on said panel.

48. An interface method according to any of claims 30 – 47 and also comprising providing detector output processing circuitry operative to receive at least one output of said at least one detector and to provide an output indication of at least two of location, orientation, shape and size of at least one impingement spot defined by impingement of said at least one electromagnetic radiation beam on said panel.

49. An interface method according to any of claims 30 – 48 and also comprising providing detector output processing circuitry operative to receive at least one output of said at least one detector and to provide an output indication of at least three of location, orientation, shape and size of at least one impingement spot defined by impingement of said at least one electromagnetic radiation beam on said panel.

50. An interface method according to any of claims 30 – 49 and also comprising providing detector output processing circuitry operative to receive at least one output of said at least one detector and to provide an output indication of location, orientation, shape and size of at least one impingement spot defined by impingement of said at least one electromagnetic radiation beam on said panel.

51. An interface method according to any of claims 30 – 50 and also comprising providing detector output processing circuitry operative to receive at least one output of said at least one detector and to provide an output indication of at least one of the location and angular orientation of said electromagnetic radiation beam emitter.

52. An interface method according to any of claims 30 – 51 and also comprising providing detector output processing circuitry operative to receive at least one output of said at least one detector and to provide an output indication of the location and angular orientation of said electromagnetic radiation beam emitter.

53. An interface method according to any of claims 30 – 52 and also comprising providing detector output processing circuitry operative to receive at least one output of said at least one detector and to provide an output indication of at least one of the location and angular orientation of said electromagnetic radiation beam emitter, said location being defined as a Z-distance between a plane of said panel along a line perpendicular thereto and a plane parallel to said plane of said panel in which a beam origin of said electromagnetic radiation beam emitter is located.

54. An interface method according to any of claims 30 – 53 and also comprising providing detector output processing circuitry operative to receive at least one output of said at least one detector and to provide an output indication of at least one of the location and angular orientation of said electromagnetic radiation beam emitter, said location being defined as a point-to-point distance between a beam origin of said electromagnetic radiation beam emitter and a center of an impingement location of said beam on said panel.

55. An interface method according to any of claims 30 – 54 and also comprising providing detector output processing circuitry operative to receive at least one output of said at least one detector and to provide an output indication of a trajectory of said electromagnetic radiation beam emitter.

56. An interface method according to any of claims 30 – 55 and also comprising providing a generally elliptical impingement spot by impingement of said beam on said panel.

57. An interface method according to claim 56 and also comprising:

providing analysis circuitry operative to determine a ratio of a major axis and a minor axis of said elliptical impingement spot; and

employing said analysis circuitry to determine an angle of intersection between said beam and said panel.

58. An interface method according to any of claims 30 – 57 and also comprising:

providing analysis circuitry operative to employ detected variations in intensity of said electromagnetic radiation at different locations on an impingement spot defined by impingement of said beam on said panel; and

employing said analysis circuitry to assist in determination of an angle of intersection between said beam and said panel.